United States
Department of
Agriculture

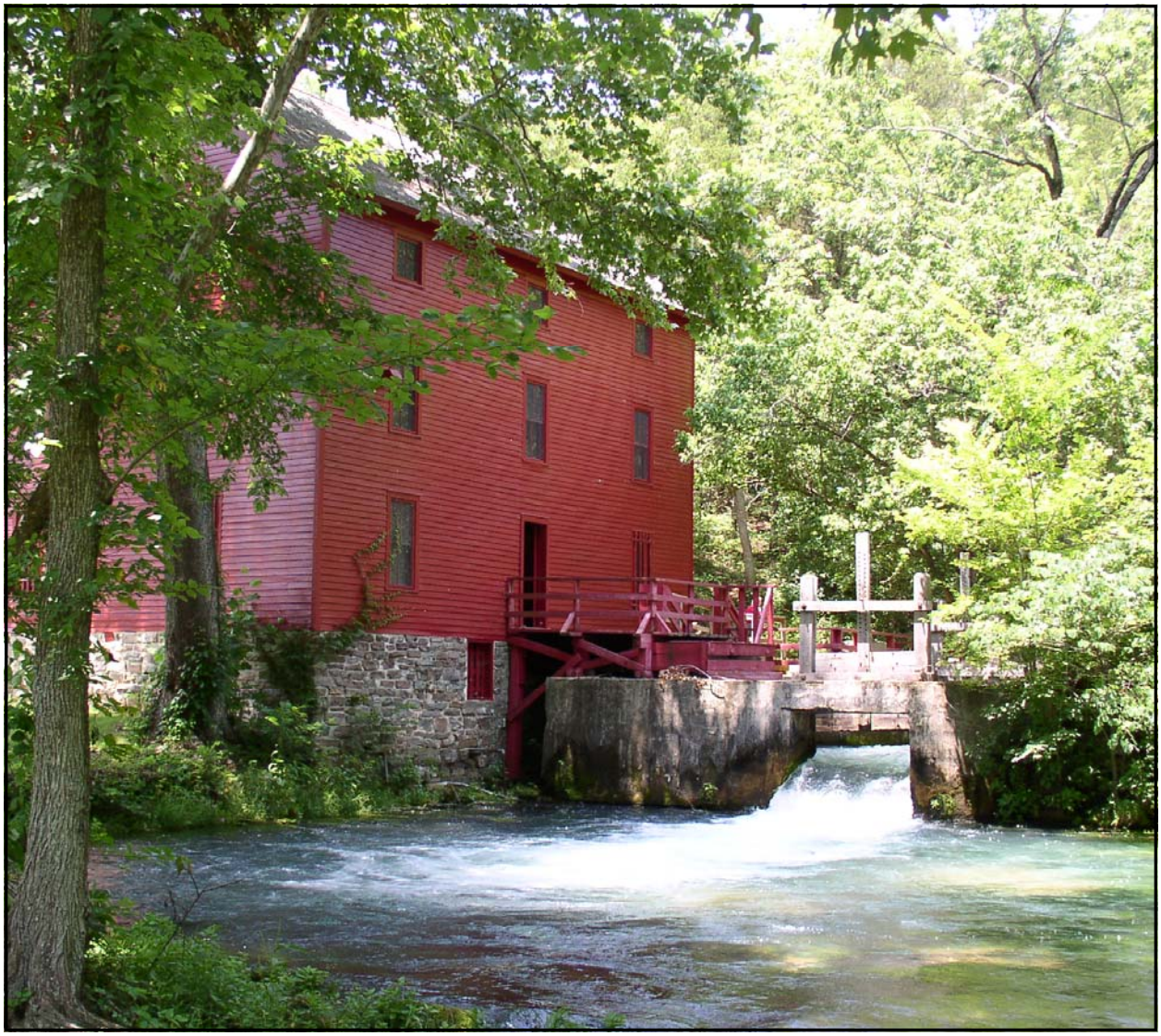
Natural
Resources
Conservation
Service

South Missouri Water Quality Project

2008 Annual Progress Report

February 2009

A Review of Fiscal Year October 1, 2007 — September 30, 2008.



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Cover Photo:

Alley Spring, located in Shannon County near Eminence, MO has an average estimated flow of 81 million gallons per day. Both the spring and 100 year old grist mill provide a picturesque setting for tourists and locals.

www.mo.nrcs.usda.gov
For more SMWQ Project Information

This document is a publication of the South Missouri Water Quality Project, Natural Resources Conservation service (NRCS) of the U.S. Department of Agriculture. NRCS works in partnership with the American people to conserve and sustain natural resources on private lands.

A copy of this report is available on the Missouri NRCS State website.

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Contents

Message From the Team Leader

Steven G. Hefner, Team Leader

I am proud to submit my fifth annual report of the South Missouri Water Quality Project – a milestone for our group. The SMWQ staff, along with its partners, has made significant progress over the last five years regarding conservation to combat non-point source pollution. The details of this report summarize our accomplishments during both the past fiscal year and the last five years of operation.

Successful government endeavors occur when local people are involved. The idea for this project office was conceived by a local Resource Conservation and Development Council and furthered by a Steering Committee comprised of local citizens with a passion for conservation of natural resources. The accomplishments of the staff over the last five years would not have been possible without the efforts of these individuals, NRCS administrative staff, and local congressional leaders. They collectively transformed a novice idea into a functioning reality.

It is important to recognize the availability of natural resources has been the key to the rise and fall of ancient and modern societies alike. Historically speaking, the United States still has a relatively short history. The bountiful resources present when our country was formed have been vital in establishing our country's success. Continued use of our natural resources is necessary for economic prosperity; however utilization must include sustainability to ensure minimal impact for future generations.

The vision of the USDA-Natural Resources Conservation Service is to *"help people help the land"*. Similarly, the mission of the South Missouri Water Quality project involves providing technical assistance to "*improve water quality in the Upper White River Basin*". Indeed, these goals are congruent because of the connectivity of the landscape. Protecting the land by managing livestock, soil fertility, crops and other vegetation protects the water from sediment, crop protection products, and nutrients. We pledge to continue working with citizens in a voluntary manner to improve natural resource concerns in the years to come.

Steven G Hefner

Team Leader, South Missouri Water Quality Project

Summary

The Upper White River Basin in Missouri has long been known for its abundant supply of clean water and scenic beauty. The settlement and subsequent agricultural and tourism industries that developed have been based on these natural resources. The substantial growth the region has experienced has placed increased pollution pressure on the environment.

In fiscal year 2002, the Missouri NRCS established a group of conservationists to compliment the network of field offices in the watershed. These conservationists have provided technical assistance to landowners, farmers, cities, and local watershed groups. Since 2002, approximately 23,841 acres of forest inventory, 1,297 acres of riparian assistance, 645 urban lawn plans, and 198 cartography map products have been accomplished. Similarly, watershed planning assistance has led to substantial state and federal funding for conservation practices in the project area.

The information in this report highlights the progress made by the South Missouri Water Quality (SMWQ) staff for the 2008 federal fiscal year (October 1, 2007—September 30, 2008). Specific details have been purged or summarized in order to protect individual landowners privacy.

All the water there will be, is.

Anonymous

Mission and Purpose

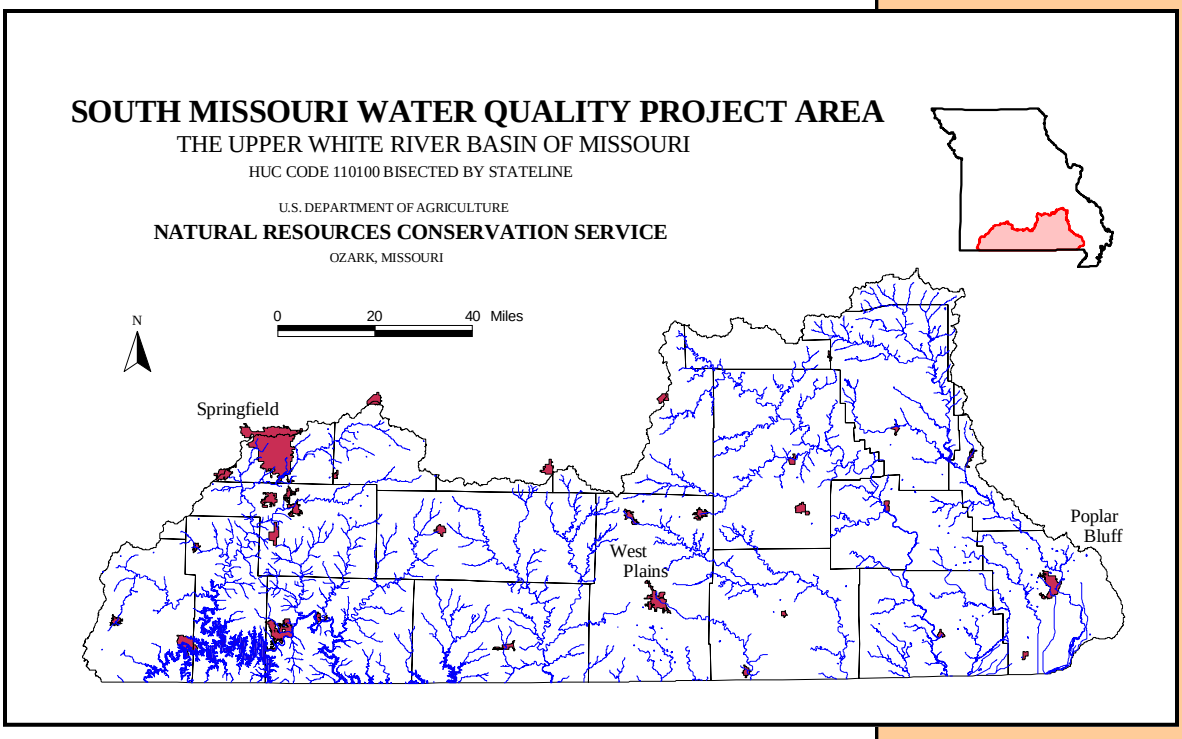
The mission of the South Missouri Water Quality Project is to provide voluntary conservation technical assistance to both rural and urban people to improve the water quality of the Upper White River Basin. Input and oversight is provided by a local steering committee comprised of stakeholders with various interests in water quality. Conservation technical assistance is provided by an interdisciplinary staff of professionals to landowners, municipalities, local watershed groups, farmers, and businesses to promote stewardship of natural resources.

Project Area

The Upper White River Basin, located primarily in the Interior Highlands region, is a 6 digit hydrologic unit (#110100, U.S. Geologic Survey) in Missouri and Arkansas comprising about 14.3 million acres. Runoff from the Upper White River Basin is received by the Lower White River Basin in Arkansas and eventually empties into the Mississippi River. Locally known as "the Ozarks," this ancient land form has been subjected to erosion that has left summits where resistant rock persists and valleys where runoff found less resistance from the land.

The state line divides the Upper White River Basin roughly in half with 47% of the land mass in Missouri and 53% in Arkansas. The project area for the South Missouri Water Quality Project includes land where the basin intersects 21 Missouri counties. The majority of the project area lies in the Ozark Plateaus, with a small portion in the Mississippi Alluvial Plain. Timber and livestock production are prevalent in the Ozark Plateaus, while deep soils and artificial drainage provide excellent row crop production in the Mississippi Alluvial Plain.

Since 1935, USDA-NRCS, formerly the Soil Conservation Service, has provided technical assistance to landowners. In 1937, NRCS began planning and implementing voluntary conservation practices through soil and water conservation districts.



Steering Committee

To help the South Missouri Water Quality Project become more successful in delivery of services, a steering committee was organized in July 2004 to offer guidance. Through the input of the Steering Committee, valuable local information about the state of the watershed and various conservation opportunities is provided. This input regarding the local resource concerns and key strategies for implementing conservation are important for, and appreciated by, the agency. The committee is comprised of individuals and community leaders who represent the broader spectrum of stakeholders having an interest in the quality of the basin's water and the economic viability of the region. Individuals have been recruited from various areas of the Upper White River Basin and serve as unpaid volunteers.

The SMWQ Steering Committee on a tour of the MSU Fruit Experiment Station in Mountain Grove, MO.

Kay Golden, SMWQ Project Steering Committee, Texas County

"I have a personal interest in our water quality in Texas County. Approximately five miles of the Big Creek runs through our place. We want it, as well as the spring fed streams, to remain crystal clear. I have learned something new at each meeting. The staff address a variety of issues and are very dedicated to their work. They have made a difference. I have thoroughly enjoyed representing Texas County on the Steering Committee and getting to visit different places within the watershed."

Ron & Maggie Kramer
Texas County

Cathy Proffitt-Boys
Howell County

Dennis Avery
Butler County

Kathryn Braden
Taney County, Chair

Becky Day
Howell County

Charlie Erickson
Oregon County

Paul Gilgen
Shannon County

Kay Golden
Texas County

Matt Morrow
Greene County

Debbie Redford
Taney County

Tracey Holden
Ripley County

Water Quality Staff

Front Row From Left: *Steven Hefner, Mary Giles,*
Back Row From Left: *Adam Coulter, Clay Robertson, Robert DeMoss*

Steven Hefner, Team Leader, is responsible for staff administration, nutrient management, and watershed planning. He assists landowners with agricultural crops and livestock production systems.

Mary Giles, Information Assistant, markets the technical services of the staff, and coordinates water quality education and outreach activities. She facilitates opportunities for community involvement through academic partnerships and community service projects.

Clay Robertson, Resource Conservationist, provides conservation planning assistance to constituents in the fields of soils, erosion control, nutrient and grassland management, and irrigation. He focuses on writing comprehensive nutrient management plans for concentrated animal feeding operations and providing irrigation technical assistance.

Robert DeMoss, Forester, uses local, state, and federal programs in implementing forestry conservation. He assists with thinning stands of trees to appropriate populations, restoring declining habitats such as glades or savannas, stabilizing and establishing riparian corridors, and reforestation of land.

Adam Coulter, Geographer, works with individual homeowners and city governments on non-agricultural resource concerns. His work includes urban sediment and erosion control, lawn management, rain gardens, parks and recreation, storm water assistance, and geographical information systems.

South Missouri Water Quality Project Office Accolades

- 2004 Missouri NRCS State Earth Team Field Office Award
- 2006 National Earth Team Chief's Field Award
- 2005-2008 Missouri State University Citizenship and Service Learning Community Partner
- 2008 Missouri State University Partner recognition at JQH Arena, Springfield
- SMWQ staff has 53 years of collective federal experience with the USDA

Urban Resource Planning

2003-2008
5 Year Project
Accomplishments

- Designed *TRIM-N*, an electronic software program to prepare urban nutrient management plans.
- Assisted partners by utilizing *TRIM-N* to prepare 645 urban nutrient management plans.
- Conducted 79 additional urban planning activities with cities, towns, villages, and individual homeowners.
- Initiated a paper recycling program within the Christian County USDA Service Center. In 2008, delivered 3,072 lbs. of paper to a local recycling plant.

Urban conservation activities in the Upper White River Basin were directed toward communities with populations ranging from a hundred to over one hundred thousand people. Urban communities possess significantly more impervious surfaces. Rooftops, roads, parking lots, and compacted areas increase surface runoff and deliver sediment, nutrients and other pollutants to receiving bodies of water. To address the variety of resource concerns found in an urban setting, SMWQ staff facilitated projects that included source water protection planning, park renovation, urban lawn maintenance, erosion control, and rain gardens on both public and private lands. Promotion of the conservation ethic to urban communities helps strengthen the link between sound land management and clean water.

Specific Accomplishments: FY 2008

- Assisted the Missouri State University Fruit Experiment Station implement a mini-319 grant for rain gardens.
- Prepared 165 urban nutrient plans in Springfield, Marshfield, Nixa, and Ozark with conservation partners.
- 20 additional urban conservation projects for individual property owners and neighborhood associations outside of the urban lawn program. Planning addressed erosion, rain gardens, native plants, storm water, detention basins, or tree health issues.
- Conservation Technical Assistance to public entities involving environmental assessments or natural resource protection during development:
    - City of Doniphan (nature/athletic park)
    - City of West Plains (storm water management)
    - City Council of Ava (urban conservation & implementation assistance for a 319 grant)
    - Missouri State University (Darr Ag Center, Bakers Acres Research Farm)
- Redesigned the *TRIM-N* software to enhance visual aids. Distributed the product with local conservation partners to co-develop urban lawn nutrient management plans.

A sediment and erosion concern resolved with the application of urban conservation practices.

Forestry Assistance

2003-2008
5 Year Project
Accomplishments

- 23,841 acres of forestland inventoried for conservation development
- 1,297 acres of riparian corridor inventoried for conservation development (approximately 107 miles)
- Prepared conservation plans for 17 landowners interested in windbreaks

Sound forestry management continues to be a focus for the South Missouri Water Quality Project. Trees were the primary native habitat for most of the Upper White River Basin before the conversion to alternative land uses. Restoration or management of existing timber will continue to enhance local economies, protect soils from erosion, provide habitat for plants and animals, and produce oxygen by removing carbon dioxide during photosynthesis. The U.S. Forest Service estimates that one acre of mature forestland can absorb six tons of carbon dioxide and produce four tons of oxygen annually—enough to support 18 people.

Congressman Roy Blunt (far left) stands in front of a riparian forest buffer with USDA-NRCS employees Steven Hefner, Garrielle DuVall, Montie Hawks, Mark Green, Robert DeMoss, and Roger Hansen.

Specific Accomplishments: FY 2008

- Assessed 4,798 acres of forestland. The assessments resulted in 2,081 acres of voluntary conservation plans in specified watersheds with private landowners to improve stands of timber or restore and protect declining habitats.
- Assessed 151 acres (11.4 miles) of riparian corridor. The assessments resulted in 11 acres or 1.6 miles of planted or enhanced management.
- Serviced 9 landowners regarding windbreaks and prepared 5 conservation plans that included engineered irrigation drip systems to accelerate growth and increase survival rates.
- Planned 9 acres of open ground for conversion to forest.

Water Resources Protection

As climatologists finish analyzing the data, it appears as if 2008 will go on record as the wettest year ever in Missouri. A steady weather pattern that brought gulf moisture through the center of the country produced heavy rains statewide with nearly 80 percent of the state departing at least 12 inches above normal precipitation. In the Upper White River Basin, some USDA field offices reported between 60 and 69 inches of rainfall for the year, representing over a 20 inch departure from historical averages. In March, a heavy storm that moved across southern Missouri swelled many streams beyond flood levels to record crests. As this discharge emptied into the chain of White River Lakes, it produced an all time peak water level of 933.25 feet at Table Rock Lake on April 12, 2008. The weather impacted local operations and influenced conservation planning considerations.

Ten emergency flood gates discharge nearly 50,000 cubic feet per second from Table Rock Lake to lower record levels in April 2008.

Specific Accomplishments: FY 2008

- Served as a nutrient management technical advisor to the City of Springfield Public Works Department for a biosolids research project. The research project has been initiated by Missouri State University.
- Inventoried 362 acres of farmland for future nutrient management plans. Completed 1,536 acres of nutrient management conservation plans and 896 acres applied (some from previous FY).
- Provided grant assistance to Southwest Missouri Resource Conservation & Development Council regarding an irrigation monitoring project in western Missouri.
- Decommissioned 1 well in FY 08 and prepared conservation plans to decommission 8 more abandoned wells in the future.
- Completed the 5th year of a cool season grass fertilizer validation experiment in Howell County, MO.

2003-2008
5 Year Project
Accomplishments

- 6,681 acres of nutrient management plans developed for rural farmland
- Assist the USDA Farm Service Agency design 163 emergency livestock water systems in response to the drought of 2005-2006.
- 30 conservation plans prepared to decommission abandoned wells.

Watershed Planning

2003-2008
5 Year Project
Accomplishments

- Co-developed 19 Rapid Watershed Assessments for Missouri watersheds
- Technical assistance to local conservation organizations resulting in approximately 9 million federal or state dollars for water quality projects
- Poultry Litter Assessment for the James River Basin
- Riparian corridor assessment for the Middle Finely River watershed
- 198 Cartography map products for conservation organizations

A significant portion of this year's area-wide planning efforts focused on coalescing and publishing information for various conservation organizations to utilize in watershed planning. SMWQ staff assisted a team of conservationists to prepare Rapid Watershed Assessments for statewide watersheds. Rapid Watershed assessments evaluate resource conditions and needs on an 8-digit hydrologic unit basis. The assessment identifies the primary resource concerns for the watershed being profiled and provides an estimate as to where conservation investments would best address the concerns of landowners, stakeholders, conservation districts, and others. The information constitutes an initial starting point from which to build a plan and seek funding for restoration activities.

Storm water from Black River in Butler County, MO requires a section of Highway 60 to be closed in March, 2008. (Photo by Paul Davis, Daily American Republic)

Specific Accomplishments: FY 2008

- Assistance to Oregon County SWCD concerning a SALT grant application for the Spring River Watershed resulted in funding of $750,000 over 7 years.
- Assistance to Webster County SWCD concerning a SALT grant application for the James River Watershed resulted in funding at $750,000 over 7 years.
- Completed 2 Rapid Watershed Assessment profiles for the Current and Black River Watersheds.
- Completed 10 Rapid Watershed Assessment matrices for the NRCS state office for watersheds statewide (included 50 modeling simulations).
- Completed 4 Rapid Watershed Assessment matrices for the University of Missouri for statewide watersheds (included 16 modeling simulations).
- 12 separate cartography map products for both internal and external customers.

Professional Training

2003-2008
5 Year Project
Accomplishments

Activities to promote the conservation ethic.

- Presented at 41 different workshops or conferences
- Conducted 10 seminars with area colleges
- Provided 7 in-service training sessions for USDA and SWCD groups

Providing hands-on learning and field experiences for individuals interested in sound conservation planning is a function of this office. Knowledge is power and it equips people to make positive stewardship decisions regarding natural resources. Training sessions provide a platform to exchange ideas and is beneficial for both the trainee and the trainer.

SMWQ Information Assistant Mary Giles (center) provides training to Selma Mascaro, Wayne County NRCS Resource Conservationist, Kim Overton, Bollinger County SWCD SALT Technician, and Sandy Curtis, Pemiscot County SWCD District Program Specialist 2, at the Wayne County Service Center in Greenville, MO.

Specific Accomplishments: FY 2008

SMWQ Project staff assisted local entities with an interest in improving regional water quality by participating in the following events as a co-organizer, trainer, or speaker:

- Heartland Regional Water Quality Sessions in Nebraska City, Nebraska
- Missouri State University Community Caravan (2 speakers)
- Congressmen Blunt-Boozman Water Quality Summit
- Presented Rapid Watershed Assessment results to South Missouri Water Quality Steering Committee and the Eastern Ozarks Forestry Council
- Missouri State University Soil Conservation – water management seminar (speaker)
- Missouri State University Service Learning Program (Community Partner)
- Missouri Department of Elementary & Secondary Education service learning program (Community Partner)
- Service Learning Recruitment Meeting with Don Hagerman, Regional Coordinator for Missouri High Schools
- Service Learning Recruitment to Poplar Bluff High School and Kiwanis Club for conservation in Bacon Memorial Park

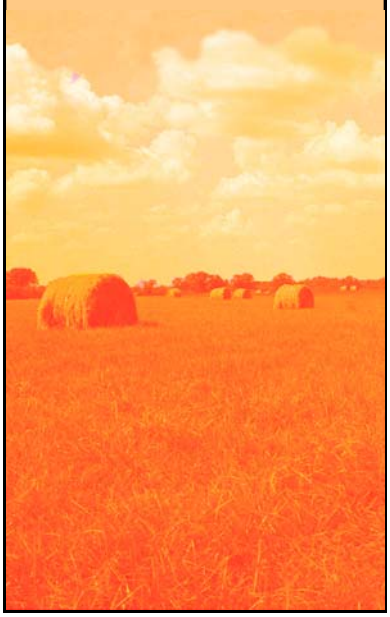
Professional Training

- Publisher training to 37 various agency personnel
- Ava High School Envirothon Training
- Forestry careers presentation to 70 Ozark Middle School students
- Created and marketed a Call-for-Artists which resulted in recruitment of an Earth Team volunteer to complete illustrations for a conservation story book project for the Missouri NRCS State Office
- Water Quality presentation at the Southwest States RC&D Conference
- Forestry presentation at the Taney County Forage Conference
- Land stewardship presentation at the 2nd annual Howell County Natural Resource and Forage Conference (keynote speaker)
- Greene County SWCD Fellows Lake Demonstration Field Day
- Southern Bull Shoals SALT Riparian Workshop (with Ozark County SWCD)
- *Conservation Planning: Processes and Practices*, Naturescaping Symposium
- *Backyard Conservation and Clean Water Tour presentation* to M.O.P.S (Mothers of Preschoolers)
- Storm water Design Training, City of Springfield-Greene County

Adam Coulter (pointing), SMWQ Urban Conservationist, explains how constructed rain gardens can help impede storm water at a field day event in Mountain Grove, MO.

A river is a report card for its watershed.

Alan Levere Connecticut Dept. of Environmental Protection



2003-2008
5 Year Project
Accomplishments

- Recruited 369 USDA-NRCS Earth Team volunteers to assist with projects that supported the mission of the South Missouri Water Quality Project to provide assistance to a diverse audience
- Conveyed the water conservation message to 5,640 households in 19 communities through the Early Childhood Education Program
- Published a Children's Conservation Storybook for National USDA Distribution
- Posted 8 issues of 'The Upper White River Review' on the Missouri NRCS website
- Posted 5 'Annual Progress Reports' on the Missouri NRCS website

Outreach Activities

On the steps of the Lincoln Memorial in 1963, Dr. Martin Luther King proclaimed his dream of unity for our nation. His vision to forward the civil rights movement to a point where individuals *"will not be judged by the color of their skin but by the content of their character"* was realized for many Americans with the historic election results of 2008. Throughout 2008, candidates from each major political party reached out to citizenry from all walks of life and encouraged them to become engaged in the democratic process.

Students learn about erosion and the effect it has on water quality in a local classroom.

Our business principles are consistent with Dr. King's philosophy of equitable rights to all. Our commitment to civil rights is not only rooted in USDA policy, but an inward belief in "equal public service for all." In one manner or another, everyone is connected to non-point source pollution of water and it will take a consorted effort from all to protect the public's water resources. Our efforts continue to include activities which take the conservation message to audiences of society that have not traditionally participated with the agency.

Specific Accomplishments: FY 2008

- An Illustration Project announcement released to 58 counties in NRCS Administrative Areas 3 & 4 produced a request from a minority community for the early childhood education program. Facilitated a meeting to bring the community representative and local field office(s) together.
- Ozarks Technical Community College Job Fair to recruit Earth Team volunteers, 500 contacts.
- SMWQ semi-annual progress report to 21 Soil and Water Conservation Districts summarizing the assistance provided and services offered through the office.
- An Interim Nutrient Management Plan produced for an Amish producer in Webster County, MO.
- Provided conservation storylines and illustrations from the Early Childhood Education Program to the State Office for publication of three books. One book was published in the fall of 2008 for statewide distribution.

Outreach Activities

- Landon Tagge, Earth Team volunteer from Greenwood High School, completed a conservation brochure promoting the benefits of planting windbreaks.
- Designed 5 Early Childhood lesson plans and posted on the State Office Website at: http://www.mo.nrcs.usda.gov/lessonplans.html.
- Designed 6 posters for Christian County Soil and Water Conservation District.
- Designed 103 Earth Team awards and presented to volunteers to recognize service.
- Designed over 50 posters and signs for the Southwest States RC&D Conference held in St. Louis, Missouri.

Media Projects featuring South Missouri Water Quality services and activities:

- Featured in Missouri State University's Citizenship & Service Learning (CASL) Annual Report highlighting the *PhotoStore* computer science and Early Childhood education projects.
- Madison Pulley, Earth Team volunteer from Greenwood High School, completed a paper on effective public service announcements and prepared a 1 minute conservation video promoting soil and water conservation through paper recycling.
- Kate Maddax, Earth Team volunteer from Greenwood High School, taught water conservation lessons to elementary students and prepared a 1 minute outreach video to promote the program.
- *Awards and Achievers*, an article recognizing Drew Gerdes, Springfield Lutheran School Elementary Teacher, was published on May 13, 2008 in the Springfield-News Leader (circulation 60,889).
- *Earth Team Volunteers Create USDA Software*, an article in the NRCS Volunteer Voice, details MSU student activities during the creation of the PhotoStore Program (1st quarter, 2008).
- *Earth Team Volunteers Assist South Missouri Water Quality Project*, an article recognizing Madison Pulley, Landon Tagge, Kate Maddax, and Jennifer Barkdoll, was published in the NRCS Volunteer Voice (3rd quarter, 2008).
- Three articles published in the Douglas County Herald – *DNR Supports Douglas County Urban Conservation Initiative Project* (12-27-07), *City Council Discusses Rate Increase* (3-27-08), *Douglas County SWCD Receives Grant* (6-5-08), contain references about the urban project SMWQ facilitated.

Any river is really the summation of the whole valley. To think of it as nothing but water is to ignore the greater part.

Hal Borland, American Author

Earth Team Activities

Congress authorized legislation in 1981 that allows the NRCS to utilize volunteers. Through the Earth Team Volunteer Program the SMWQ Project cooperatively provides individuals opportunities to serve in community based projects. Our goal is to engage others in our conservation mission.

Specific Accomplishments:

- Reduce work load by securing 1,862 hours of labor from 96 volunteers (0.90 staff year) through promotion of the USDA Earth Team Program to assist in program delivery, and to access human talent and services not readily available at the field level. Given the standard volunteer rate of $19.51/hr, this volunteer effort represents approximately $36,328.
- 94 of the Earth Team volunteers presented age appropriate, pre-approved water quality curriculum to 1,598 students and teachers in early childhood classrooms in 11 communities within the watershed.

Earth Team Volunteers Receive Awards for Creating *"The Little Acorn"* Story Book

From Left: Christa Kauble and Mary Jo Tannehill

Christa Kauble, author, and Mary Jo Tannehill, illustrator, received the Area 4 and State Earth Team Awards for the creation of "*The Little Acorn"* story book. The book targets children between the ages of three and eight years of age and introduces fundamental conservation concepts. It is available to educators for use in classrooms in Missouri and can be obtained through the Missouri NRCS Public Affairs Office by calling: (573) 876-0911.

SMWQ Earth Team Coordinator Receives Missouri NRCS Earth Team Employee Award

Mary Giles

Mary Giles received the Area 4 and State Earth Team NRCS employee awards for development, oversight, and promotion of innovative projects which utilize volunteers and support the mission of the SMWQ Project.

Volunteers "Far and Near"

Amanda Herzig

Volunteers who contribute service in the SMWQ not only assist with accomplishing the mission of the office, but also become some of our greatest advocates within the community.

Amanda Herzig served as an Earth Team volunteer through the Early Childhood Education Program in 2008. She recently assisted with a referral of a local elementary school that had started an environmental conservation project and needed a guest speaker to introduce water conservation concepts in a first grade classroom.

Amanda is just one example of the positive effect education and volunteer service can have on a community. Her experience serving as an Earth Team volunteer heightened her own awareness of water quality and conservation issues, and this awareness continues beyond her USDA volunteer experience.

The staff of the SMWQ want to thank Amanda and the many other volunteers who continue to be our advocates within the community.